ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

PALMERSTON NORTH AIRPORT AND MERCURY NZ LIMITED

Prepared by: Tara Gannon

Date audit commenced: 26 November 2019

Date audit report completed: 8 January 2020

Audit report due date: 17 January 2020

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EXECUTIVE SUMMARY

This audit of the **Palmerston North Airport** DUML database and processes was conducted at the request of **Mercury NZ Limited (Mercury)** in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have been correctly applied.

The audit was conducted in accordance with the audit guidelines for DUML audits version 1.1. The scope of the audit encompasses the collection, security and accuracy of the data, including the preparation of submission information.

A RAMM database is managed by **Alf Downs Streetlighting Limited (Alf Downs)** on behalf of Palmerston North Airport. The database is remotely hosted by RAMM Software Ltd.

Database maintenance processes have changed following a change in contractor. Streetlight new connections, upgrades and maintenance is completed by B & M Electrical and Rob Cuff, who are contractors to Palmerston North City Council. Installation of new unmetered lights and changes to existing lights were intended to be communicated to Alf Downs but this process has not been operating as intended. Alf Downs occasionally completes fault work, and if this results in a change to the light installed Alf Downs will update the database.

When requested, Alf Downs completes an audit of the Palmerston North Airport streetlights and updates the database. The last audit was completed in October 2018, and changes since then have not been made in the database.

All lights recorded in the database were surveyed in the field. I found that the field wattage was 94.0% of the database wattage, indicating that the installed capacity is 6.0% lower than the database. The database is not considered to be accurate because the error is more than ±5.0%.

- The installed capacity is 747 W lower than the database indicates.
- The total annual consumption is estimated to be 3,190 kWh per annum lower than the database indicates.

Mercury reconciles this DUML load using the HHR profile in accordance with exemption 233. Wattages are derived from a RAMM extract provided by Alf Downs each month. On and off times are derived from a data logger.

On 18 June 2019, the Electricity Authority issued a memo clarifying the memo of 2012 that stated that a monthly snapshot was sufficient to calculate submission from, and confirmed the code requirement to calculate the correct monthly load must:

- take into account when each item of load was physically installed or removed; and
- wash up volumes must take into account where historical corrections have been made to the DUML load and volumes.

The current monthly report is provided as a snapshot and is non-compliant. Mercury completes revision submissions where corrections are required and confirmed that no corrections have occurred in the last 12 months, but corrections will be processed for a submission error identified during the audit. Mercury has not yet updated their processes to be consistent with the Authority's memo.

The future risk rating of 14 indicates that the next audit be completed in 12 months. I recommend that the next audit is completed in 15 months, due to the low impact of the non-compliances and because Mercury intends to work with Palmerston North Airport to resolve the issued identified.

The matters raised are detailed below:

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Deriving submission information	2.1	11(1) of Schedule 15.3	The database is not confirmed as accurate with a 95% level of confidence. Submission information for November 2018 to October 2019 included metered lights connected to ICP 1000569182PCF2F, resulting in over submission of 4,417.15 kWh across the affected period. Corrected volumes will be washed up through the revision process. Ten 150W metal halide lamps have an invalid zero gear wattage. For the four lights still present in the field this results in under submission of 72W or 308 kWh p.a. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot. Livening dates are recorded as the installation date for new connections, and change dates may not reflect the date of the change if they are not processed in RAMM at the time that the change occurs.	Weak	Low	3	Identified
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	Ten 150W metal halide lamps have an invalid zero gear wattage. For the four lights still present in the field this results in under submission of 72W or 308 kWh p.a.	Moderate	Low	2	Identified
Audit trails	2.5	11(2A) of Schedule 15.3	Two lights were missing from the database.	Weak	Low	3	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	The database is not confirmed as accurate with a 95% level of confidence. Ten 150W metal halide lamps have an invalid zero gear wattage. For the four lights still present in the field this results in under submission of 72W or 308 kWh p.a.	Weak	Low	3	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
			Livening dates are recorded as the installation date for new connections, and change dates may not reflect the date of the change if they are not processed in RAMM at the time that the change occurs.				
Volume information accuracy	3.2	15.2 and 15.37B(c)	The database is not confirmed as accurate with a 95% level of confidence. Submission information for November 2018 to October 2019 included metered lights connected to ICP 1000569182PCF2F, resulting in over submission of 4,417.15 kWh across the affected period. Corrected volumes will be washed up through the revision process. Ten 150W metal halide lamps have an invalid zero gear wattage. For the four lights still present in the field this results in under submission of 72W or 308 kWh p.a. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot. Livening dates are recorded as the installation date for new connections, and change dates may not reflect the date of the change if they are not processed in RAMM at the time that the change occurs.	Weak	Low	3	Identified
Future Risk Rating						14	

Future risk rating	0	1-4	5-8	9-15	16-18	19+
Indicative audit frequency	36 months	24 months	18 months	12 months	6 months	3 months

RECOMMENDATIONS

Subject	Section	Recommendation
		Nil

ISSUES

Subject	Section	Description	Issue
		Nil	

1. ADMINISTRATIVE

1.1. Exemptions from Obligations to Comply with Code

Code reference

Section 11 of Electricity Industry Act 2010.

Code related audit information

Section 11 of the Electricity Industry Act provides for the Electricity Authority to exempt any participant from compliance with all or any of the clauses.

Audit observation

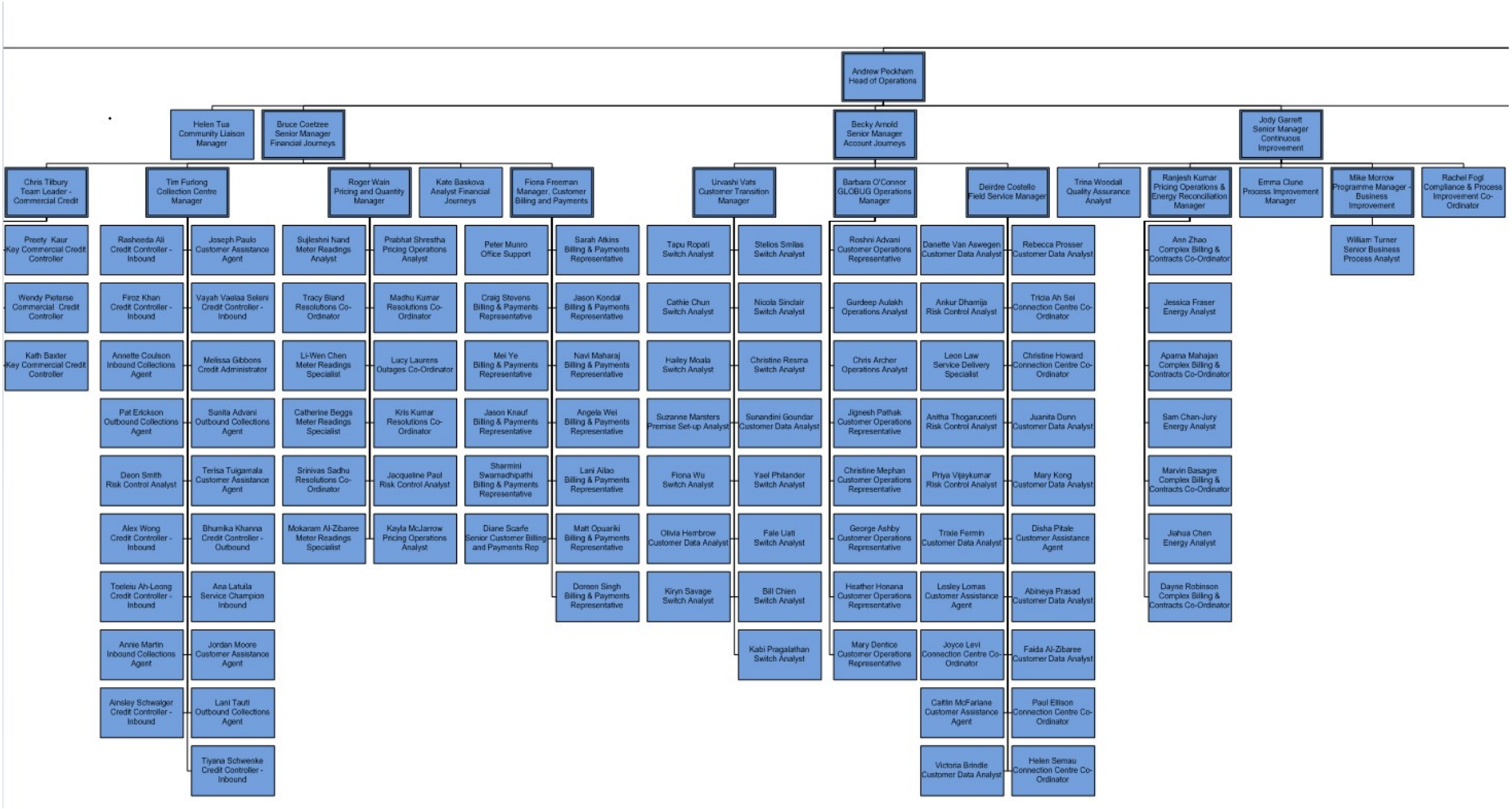
Current code exemptions were reviewed on the Electricity Authority website.

Audit commentary

Mercury has been granted exemption No. 233. This allows them to provide half-hour ("HHR") submission information instead of non half-hour ("NHH") submission information for distributed unmetered load ("DUML"). This exemption expires on 31 October 2023.

1.2. Structure of Organisation

Mercury provided their current organisational structure:



1.3. Persons involved in this audit

Auditor:

Tara Gannon

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Philip Harris	Street Lighting Contract Administration	The Downs Group
Brent Lawry	Terminal Manager	Palmerston North Airport Limited
Kayla McJarrow	Compliance, Risk & Financial Reconciliation Analyst	Mercury Energy

1.4. Hardware and Software

The SQL database used for the management of DUML is remotely hosted by RAMM Software Ltd. The database is commonly known as "RAMM" which stands for "Roading Asset and Maintenance Management". The specific module used for DUML is called RAMM Contractor.

RAMM Software Limited backs up the database and assists with disaster recovery as part of their hosting service. Nightly backups are performed. As a minimum, daily backups are retained for the previous five working days, weekly backups are retained for the previous four weeks, and monthly backups are retained for the previous six months.

Access to the database is secure by way of password protection.

1.5. Breaches or Breach Allegations

There are no breach allegations relevant to the scope of this audit.

1.6. ICP Data

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0900091389PC84E	PN AIRPORT LAND TERMINAL ACCESS ROAD	BPE0331	HHR	118	12,490

The database also includes some metered lights connected to ICP 1000569182PCF2F, which were added to the database in November 2018. These lights were included in the submission data for November 2018 to October 2019 in error, and corrected submission information will be washed up as described in **section 2.1**.

1.7. Authorisation Received

All information was provided directly by Mercury, Palmerston North Airport, or Alf Downs.

1.8. Scope of Audit

This audit of the Palmerston North DUML database and processes was conducted at the request of Mercury in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have been correctly applied.

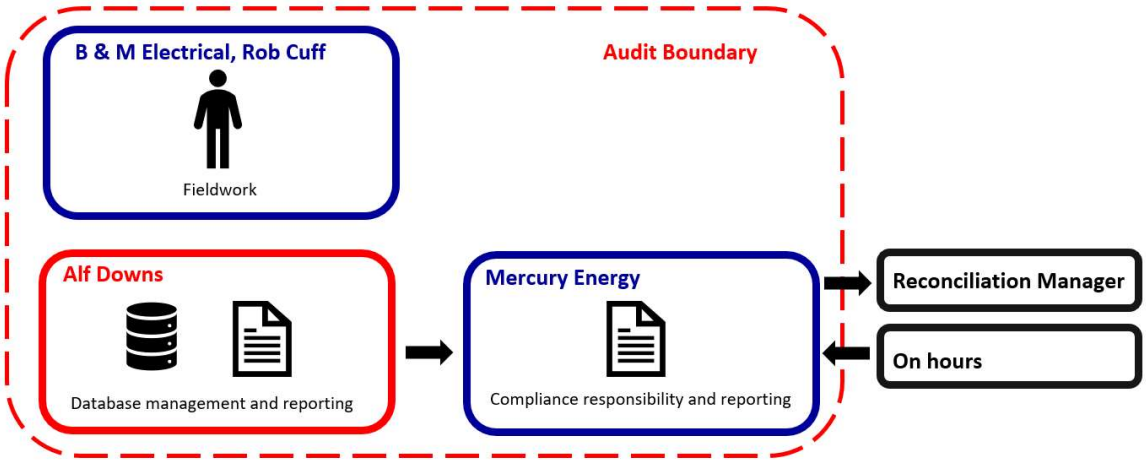
The audit was conducted in accordance with the audit guidelines for DUML audits version 1.1.

A RAMM database is managed by Alf Downs on behalf of Palmerston North Airport. The database is remotely hosted by RAMM Software Ltd.

Database maintenance processes have changed following a change in contractor. Streetlight new connections, upgrades and maintenance is completed by B & M Electrical and Rob Cuff, who are contractors to Palmerston North City Council. Installation of new unmetered lights and changes to existing lights were intended to be communicated to Alf Downs but this process has not been operating as intended. Alf Downs occasionally completes fault work, and if this results in a change to the light installed Alf Downs will update the database.

When requested, Alf Downs completes an audit of the Palmerston North Airport streetlights and updates the database. The last audit was completed in October 2018, and changes since then have not been made in the database.

The scope of the audit encompasses the collection, security and accuracy of the data, including the preparation of submission information based on the database reporting. The diagram below shows the audit boundary for clarity.



The field audit was undertaken of all 118 lights on 26 November 2019.

1.9. Summary of previous audit

The previous audit of this database was undertaken by Tara Gannon of Veritek Limited in August 2017. The summary table below shows the statuses of the non-compliances and recommendation raised in the previous audit. Further comment is made in the relevant sections of this report.

Subject	Section	Clause	Non-compliance	Status
ICP identifier	2.2.1	Clause 11(2)(a) of Schedule 15.3	One item of load does not have an ICP number recorded.	Cleared, refer to **section 2.2**
Tracking of load changes	2.3	Clause 11(3) of Schedule 15.3	One item of load was not located, I believe the missing pole is either L1022 or L1023. Three items of load appear to have been replaced (L1022, L1029 and L1031). Three items of load had wattage different to what was recorded on the physical lamp. Pole IDs L1031, L1013 and L1014 all have 150W recorded in the database and 110W recorded on the lamp.	Still existing, refer to **sections 2.5** and **3.1**

Subject	Section	Clause	Non-compliance	Status
Tracking of load changes	2.3	Clause 11(3) of Schedule 15.3	Check the lights in the restricted access area at the McGregor Airport Ext and on Airport Loop and update the database if necessary.	Cleared, the lights have been replaced with LEDs.

1.10. Distributed unmetered load audits (Clause 16A.26 and 17.295F)

Code reference

Clause 16A.26 and 17.295F

Code related audit information

Retailers must ensure that DUML database audits are completed:

1. *by 1 June 2018 (for DUML that existed prior to 1 June 2017)*
2. *within three months of submission to the reconciliation manager (for new DUML)*
3. *within the timeframe specified by the Authority for DUML that has been audited since 1 June 2017.*

Audit observation

Mercury have requested Veritek to undertake this streetlight audit.

Audit commentary

This audit report confirms that the requirement to conduct an audit has been met for this database within the required timeframe.

Audit outcome

Compliant

2. DUML DATABASE REQUIREMENTS

2.1. Deriving submission information (Clause 11(1) of Schedule 15.3)

Code reference

Clause 11(1) of Schedule 15.3

Code related audit information

The retailer must ensure the:

- *DUML database is up to date*
- *methodology for deriving submission information complies with Schedule 15.5.*

Audit observation

The process for calculation of consumption was examined and the application of profiles was checked. The database was checked for accuracy.

Audit commentary

Mercury reconciles this DUML load using the HHR profile in accordance with exemption 233.

- Wattages are derived from a RAMM extract provided by Alf Downs each month. The database is not confirmed as accurate as recorded in **section 3.1**.
- On and off times are derived from a data logger.

I reviewed the submission information for September 2019 and confirmed that it the calculation methodology was correct, and that wattages were based on the RAMM extract and on hours were based on data logger information.

The database includes some metered lights connected to ICP 1000569182PCF2F, which were added to the database in November 2018. These lights were included in the submission data for November 2018 to October 2019 in error, resulting in over submission of 4,417.15 kWh across the affected period. To resolve this issue:

1. Mercury have reversed their invoices and corrected the volumes to exclude the metered lights; corrected submission information will be washed up by revision 14 for each affected period; and
2. Mercury have asked Alf Downs to remove metered ICP 1000569182PCF2F from the database extract.

Some database inaccuracy is caused by:

Issue	Estimated volume information impact (annual kWh)
Ten 150W metal halide lamps have an invalid zero gear wattage. For the four lights still present in the field this results in under submission of 72W or 308 kWh p.a.	Under submission of 308 kWh p.a.

On 18 June 2019, the Electricity Authority issued a memo clarifying the memo of 2012 that stated that a monthly snapshot was sufficient to calculate submission from, and confirmed the code requirement to calculate the correct monthly load must:

- take into account when each item of load was physically installed or removed; and
- wash up volumes must take into account where historical corrections have been made to the DUML load and volumes.

The current monthly report is provided as a snapshot and is non-compliant. Mercury completes revision submissions where corrections are required and confirmed that no corrections have occurred in the last 12 months, but corrections will be processed for a submission error identified during the audit. Mercury has not yet updated their processes to be consistent with the Authority's memo.

The RAMM database records an installation date, which is used to record the date of livening. There is no separate livening date.

Most new connections are situated in the secure carparks, which are metered and not required to be included in the database.

Change dates are automatically generated by RAMM when records change but cannot be selected by the user. Because changes are normally entered when Alf Downs completes an audit, they do not usually reflect the date that the change occurred.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 01-Sep-19 To: 30-Sep-19	The database is not confirmed as accurate with a 95% level of confidence. Submission information for November 2018 to October 2019 included metered lights connected to ICP 1000569182PCF2F, resulting in over submission of 4,417.15 kWh across the affected period. Corrected volumes will be washed up through the revision process. Ten 150W metal halide lamps have an invalid zero gear wattage. For the four lights still present in the field this results in under submission of 72W or 308 kWh p.a. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot. Livening dates are recorded as the installation date for new connections, and change dates may not reflect the date of the change if they are not processed in RAMM at the time that the change occurs. Potential impact: Low Actual impact: Low Audit history: None Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls over the database are rated as weak, because they do not ensure that additions and changes to database information are consistently communicated to Alf Downs for update in the database. The audit risk rating is low based on kWh variances discussed in **section 3.1**. Corrected volumes will be washed up through the revision process for the metered lights which were incorrectly included in the submission information.

Actions taken to resolve the issue	Completion date	Remedial action status
Mercury will liaise with the customer to ensure database is tracked and updated correctly in timely manner.	May 2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Mercury will liaise with the customer to ensure database is tracked and updated correctly in timely manner.	May 2020	

2.2. ICP identifier and items of load (Clause 11(2)(a) and (aa) of Schedule 15.3)

Code reference

Clause 11(2)(a) and (aa) of Schedule 15.3

Code related audit information

The DUML database must contain:

- *each ICP identifier for which the retailer is responsible for the DUML*
- *the items of load associated with the ICP identifier.*

Audit observation

The database was checked to confirm the correct ICP was recorded against each item of load.

Audit commentary

The RAMM database contains the ICP identifier for all 118 items of load.

Audit outcome

Compliant

2.3. Location of each item of load (Clause 11(2)(b) of Schedule 15.3)

Code reference

Clause 11(2)(b) of Schedule 15.3

Code related audit information

The DUML database must contain the location of each DUML item.

Audit observation

The database was checked to confirm the location is recorded for all items of load.

Audit commentary

The RAMM database contains GPS coordinates, road names, displacements, and pole IDs for all 118 items of load.

Audit outcome

Compliant

2.4. Description and capacity of load (Clause 11(2)(c) and (d) of Schedule 15.3)

Code reference

Clause 11(2)(c) and (d) of Schedule 15.3

Code related audit information

The DUML database must contain:

- *a description of load type for each item of load and any assumptions regarding the capacity*
- *the capacity of each item in watts.*

Audit observation

The database was checked to confirm that:

- it contained a field for light type and wattage capacity;
- wattage capacities include any ballast or gear wattage; and
- each item of load has a light type, light wattage, and gear wattage recorded.

Audit commentary

The database contains the lamp make and model, lamp wattage and gear wattage. All items of load have a lamp model, lamp wattage, and gear wattage populated.

No lamp wattages were invalidly recorded as zero.

The gear wattages for ten 150W metal halide lamps were invalidly recorded as zero. During the field audit I found that six of these lights were not present in the field. For the four lights still present the difference is 72W or 308 kWh p.a. based on 4,271 burn hours.

Pole ID	Model	Lamp Wattage	Gear Wattage	Expected gear wattage
12176	150watt Metal Halide	150	0	18
12176	150watt Metal Halide	150	0	18
12176	150watt Metal Halide	150	0	18
12176	150watt Metal Halide	150	0	18
12177	150watt Metal Halide	150	0	18
12177	150watt Metal Halide	150	0	18
12177	150watt Metal Halide	150	0	18
12177	150watt Metal Halide	150	0	18
12177	150watt Metal Halide	150	0	18
12177	150watt Metal Halide	150	0	18

The accuracy of the recorded wattages is discussed in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clauses 11(2)(c) and (d) of Schedule 15.3 From: 01-Sep-19 To: 30-Sep-19	Ten 150W metal halide lamps have an invalid zero gear wattage. For the four lights still present in the field this results in under submission of 72W or 308 kWh p.a. Potential impact: Low Actual impact: Low Audit history: Once Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as moderate, because incorrect gear wattages are recorded for one lamp model. All other lamps are LEDs and genuinely have zero gear wattages. The impact is low because of the kWh as discussed above.

Actions taken to resolve the issue	Completion date	Remedial action status
Mercury will liaise with the customer to ensure database is tracked and updated correctly in timely manner.	May 2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Mercury will liaise with the customer to ensure database is tracked and updated correctly in timely manner.	May 2020	

2.5. All load recorded in database (Clause 11(2A) of Schedule 15.3)

Code reference

Clause 11(2A) of Schedule 15.3

Code related audit information

The retailer must ensure that each item of DUML for which it is responsible is recorded in this database.

Audit observation

The field audit was undertaken of all 118 lights on 26 November 2019.

Audit commentary

The field audit discrepancies are detailed in the table below:

Light model	Database count	Field count	Light count difference	Wattage recorded incorrectly	Comments
150watt Metal Halide	10	4	-6	4	Six 150W metal halides were not located in the field; they

Light model	Database count	Field count	Light count difference	Wattage recorded incorrectly	Comments
					were associated with a billboard which was removed. Four 150W metal halides were recorded with a gear wattage of 0 but should have had 18W.
53 4AH	5	5	-	-	
68 2ES	2	2	-	-	
DISANO STELVIO 1	47	47	-	1	One XSP2 74W 21 was recorded as a Disano Stelvio 1.
Transnet TNL0729-40W	1	1	-	-	
XSP2 74W 210	53	55	2	-	Two single XSP2 74W 210 were located on the outer edge of the roundabout at Airport Dr and Terminal Access Rd, but were not recorded in the database.
Grand Total	**118**	**114**	**-6 and +2**	**5**	

The audit found two additional lights on the outer edge of the roundabout at Airport Dr and Terminal Access Rd, which were not recorded in the database. Other light count and wattage differences identified during the field audit are recorded as non-compliance in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: 01-Sep-19 To: 26-Nov-19	Two lights were missing from the database. Potential impact: Low Actual impact: Low Audit history: None Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls over the database are rated as weak, because they do not ensure that additions and changes to database information are communicated to Alf Downs promptly for update in the database. The audit risk rating is low based on kWh variances.

Actions taken to resolve the issue	Completion date	Remedial action status
Mercury will liaise with the customer to ensure database is tracked and updated correctly in timely manner.	May 2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Mercury will liaise with the customer to ensure database is tracked and updated correctly in timely manner.	May 2020	

2.6. Tracking of load changes (Clause 11(3) of Schedule 15.3)

Code reference

Clause 11(3) of Schedule 15.3

Code related audit information

The DUML database must track additions and removals in a manner that allows the total load (in kW) to be retrospectively derived for any given day.

Audit observation

The process for tracking of changes in the database was examined.

Audit commentary

The RAMM database functionality achieves compliance with the code.

The change management process and the compliance of the database reporting provided to Mercury is detailed in **sections 3.1** and **3.2**.

Audit outcome

Compliant

2.7. Audit trail (Clause 11(4) of Schedule 15.3)

Code reference

Clause 11(4) of Schedule 15.3

Code related audit information

The DUML database must incorporate an audit trail of all additions and changes that identify:

- *the before and after values for changes*
- *the date and time of the change or addition*
- *the person who made the addition or change to the database.*

Audit observation

The database was checked for audit trails.

Audit commentary

The database has a complete audit trail.

Audit outcome

Compliant

3. ACCURACY OF DUML DATABASE

3.1. Database accuracy (Clause 15.2 and 15.37B(b))

Code reference

Clause 15.2 and 15.37B(b)

Code related audit information

Audit must verify that the information recorded in the retailer's DUML database is complete and accurate.

Audit observation

Mercury's submissions are based on a monthly extract from the RAMM database. A RAMM database extract was provided in September 2019 and I assessed the accuracy of this by using the DUML Statistical Sampling Guideline. The table below shows the survey plan.

Plan Item	Comments
Area of interest	Palmerston North Airport streetlights
Strata	The database contains the Palmerston North Airport streetlights. All 118 items of load were checked.
Area units	Not applicable, all 118 items of load were checked.
Total items of load	All 118 items of load were checked.

Wattages were checked for alignment with the published standardised wattage table produced by the Electricity Authority against the RAMM database.

The change management process and timeliness of database updates was evaluated.

Audit commentary

Field audit findings

All lights recorded in the database were surveyed in the field. I found that the field wattage was 94.0% of the database wattage, indicating that the installed capacity is 6.0% lower than the database. The database is not considered to be accurate because the error is more than ±5.0%. The variances in the field are detailed in **section 2.5**.

- The installed capacity is 747 W lower than the database indicates.
- The total annual consumption is estimated to be 3,190 kWh per annum lower than the database indicates.

Light description and capacity accuracy

As discussed in **section 2.4**, all lights have a lamp and gear wattage recorded.

The gear wattages for ten 150W metal halide lamps were invalidly recorded as zero. During the field audit I found that six of these lights were not present in the field. For the four lights still present the difference is 72W or 308 kWh p.a. based on 4,271 burn hours.

Lamp and gear wattages for all other lamps were compared to the expected values and found to be recorded correctly.

Change management process findings

Database maintenance processes have changed following a change in contractor. Streetlight new connections, upgrades and maintenance is completed by B & M Electrical and Rob Cuff, who are contractors to Palmerston North City Council. Installation of new unmetered lights and changes to existing lights were intended to be communicated to Alf Downs, but this process has not been operating as expected. Alf Downs occasionally completes fault work (such as when a pole is damaged by an accident), and if this results in a change to the light installed Alf Downs will update the database.

When requested, Alf Downs completes an audit of the Palmerston North Airport streetlights and updates the database. The last audit was completed in October 2018, and changes since then have not been made in the database.

The current monthly report is provided as a snapshot and this practice is non-compliant. When a wattage is changed in the database due to a physical change or a correction, only the record present at the time the report is run is recorded, not the historical information showing dates of changes.

The RAMM database records an installation date, which is used to record the date of livening. There is no separate livening date.

Most new connections are situated in the secure carparks, which are metered and not required to be included in the database.

Change dates are automatically generated by RAMM when records change but cannot be selected by the user. Because changes are normally entered when Alf Downs completes an audit, they do not usually reflect the date that the change occurred.

Monthly outage patrols are completed for lights on Airport Road.

Festive lights

There are no festive lights at Palmerston North Airport.

Private lights

There are no private lights at Palmerston North Airport.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 01-Sep-19 To: 26-Nov-19	The database is not confirmed as accurate with a 95% level of confidence. Ten 150W metal halide lamps have an invalid zero gear wattage. For the four lights still present in the field this results in under submission of 72W or 308 kWh p.a. Livening dates are recorded as the installation date for new connections, and change dates may not reflect the date of the change if they are not processed in RAMM at the time that the change occurs. Potential impact: Low Actual impact: Low Audit history: Once Controls: Weak Breach risk rating: 3

Audit risk rating	Rationale for audit risk rating
Low	The controls over the database are rated as weak, because they do not ensure that additions and changes to database information are consistently communicated to Alf Downs for update in the database. The audit risk rating is low based on kWh variances.

Actions taken to resolve the issue	Completion date	Remedial action status
Mercury will liaise with the customer to ensure database is tracked and updated correctly in timely manner.	May 2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Mercury will liaise with the customer to ensure database is tracked and updated correctly in timely manner.	May 2020	

3.2. Volume information accuracy (Clause 15.2 and 15.37B(c))

Code reference

Clause 15.2 and 15.37B(c)

Code related audit information

The audit must verify that:

- *volume information for the DUML is being calculated accurately*
- *profiles for DUML have been correctly applied.*

Audit observation

The submission was checked for accuracy for the month the database extract was supplied. This included:

- checking the registry to confirm that the ICP has the correct profile and submission flag; and
- checking the database extract combined with the on hours against the submitted figure to confirm accuracy.

Audit commentary

Mercury reconciles this DUML load using the HHR profile, and the correct profiles and submission types are recorded on the registry.

Mercury reconciles this DUML load using the HHR profile in accordance with exemption 233.

- Wattages are derived from a RAMM extract provided by Alf Downs each month. The database is not confirmed as accurate as recorded in **section 3.1**.
- On and off times are derived from a data logger.

I reviewed the submission information for September 2019 and confirmed that it the calculation methodology was correct, and that wattages were based on the RAMM extract and on hours were based on data logger information.

The database includes some metered lights connected to ICP 1000569182PCF2F, which were added to the database in November 2018. These lights were included in the submission data for November 2018

to October 2019 in error, resulting in over submission of 4,417.15 kWh across the affected period. To resolve this issue:

1. Mercury have reversed their invoices and corrected the volumes to exclude the metered lights; corrected submission information will be washed up by revision 14 for each affected period; and
2. Mercury have asked Alf Downs to remove metered ICP 1000569182PCF2F from the database extract.
3. Some database inaccuracy is caused by:

Issue	Estimated volume information impact (annual kWh)
Ten 150W metal halide lamps have an invalid zero gear wattage. For the four lights still present in the field this results in under submission of 72W or 308 kWh p.a.	Under submission of 308 kWh p.a.

On 18 June 2019, the Electricity Authority issued a memo clarifying the memo of 2012 that stated that a monthly snapshot was sufficient to calculate submission from, and confirmed the code requirement to calculate the correct monthly load must:

- take into account when each item of load was physically installed or removed; and
- wash up volumes must take into account where historical corrections have been made to the DUML load and volumes.

The current monthly report is provided as a snapshot and is non-compliant. Mercury completes revision submissions where corrections are required and confirmed that no corrections have occurred in the last 12 months, but corrections will be processed for a submission error identified during the audit. Mercury has not yet updated their processes to be consistent with the Authority's memo.

The RAMM database records an installation date, which is used to record the date of livening. There is no separate livening date.

Most new connections are situated in the secure carparks, which are metered and not required to be included in the database.

Change dates are automatically generated by RAMM when records change but cannot be selected by the user. Because changes are normally entered when Alf Downs completes an audit, they do not usually reflect the date that the change occurred.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 01-Sep-19 To: 30-Sep-19	The database is not confirmed as accurate with a 95% level of confidence. Submission information for November 2018 to October 2019 included metered lights connected to ICP 1000569182PCF2F, resulting in over submission of 4,417.15 kWh across the affected period. Corrected volumes will be washed up through the revision process. Ten 150W metal halide lamps have an invalid zero gear wattage. For the four lights still present in the field this results in under submission of 72W or 308 kWh p.a. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot. Livening dates are recorded as the installation date for new connections, and change dates may not reflect the date of the change if they are not processed in RAMM at the time that the change occurs. Potential impact: Low Actual impact: Low Audit history: None Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls over the database are rated as weak, because they do not ensure that additions and changes to database information are consistently communicated to Alf Downs for update in the database. The audit risk rating is low based on kWh variances discussed in **section 3.1**. Corrected volumes will be washed up through the revision process for the metered lights which were incorrectly included in the submission information.

Actions taken to resolve the issue	Completion date	Remedial action status
Mercury will liaise with the customer to ensure database is tracked and updated correctly in timely manner.	May 2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Mercury will liaise with the customer to ensure database is tracked and updated correctly in timely manner.	May 2020	

CONCLUSION

A RAMM database is managed by Alf Downs on behalf of Palmerston North Airport. The database is remotely hosted by RAMM Software Ltd.

Database maintenance processes have changed following a change in contractor. Streetlight new connections, upgrades and maintenance is completed by B & M Electrical and Rob Cuff, who are contractors to Palmerston North City Council. Installation of new unmetered lights and changes to existing lights were intended to be communicated to Alf Downs, but this process has not been operating as intended. Alf Downs occasionally completes fault work, and if this results in a change to the light installed Alf Downs will update the database.

When requested, Alf Downs completes an audit of the Palmerston North Airport streetlights and updates the database. The last audit was completed in October 2018, and changes since then have not been made in the database.

All lights recorded in the database were surveyed in the field. I found that the field wattage was 94.0% of the database wattage, indicating that the installed capacity is 6.0% lower than the database. The database is not considered to be accurate because the error is more than ±5.0%.

- The installed capacity is 747 W lower than the database indicates.
- The total annual consumption is estimated to be 3,190 kWh per annum lower than the database indicates.

Mercury reconciles this DUML load using the HHR profile in accordance with exemption 233. Wattages are derived from a RAMM extract provided by Alf Downs each month. On and off times are derived from a data logger.

On 18 June 2019, the Electricity Authority issued a memo clarifying the memo of 2012 that stated that a monthly snapshot was sufficient to calculate submission from, and confirmed the code requirement to calculate the correct monthly load must:

- take into account when each item of load was physically installed or removed; and
- wash up volumes must take into account where historical corrections have been made to the DUML load and volumes.

The current monthly report is provided as a snapshot and is non-compliant. Mercury completes revision submissions where corrections are required and confirmed that no corrections have occurred in the last 12 months, but corrections will be processed for a submission error identified during the audit. Mercury has not yet updated their processes to be consistent with the Authority's memo.

The future risk rating of 14 indicates that the next audit be completed in 12 months. I recommend that the next audit is completed in 15 months, due to the low impact of the non-compliances and because Mercury intends to work with Palmerston North Airport to resolve the issued identified.

PARTICIPANT RESPONSE

Mercury will:

a) Liaise with the customer to ensure database is tracked and updated correctly in timely manner.
b) Review it's current process to ensure data is captured and reported as required by the code.